FARES BEN SLIMANE

AI Research Developer

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Profile: Highly skilled AI Research Developer with expertise in machine learning, speech recognition, and computer vision. Proven track record in developing and deploying innovative solutions for real-world problems. Passionate about leveraging technology for positive impact.

EXPERIENCE

Gap time

Feb 2024 – Present

- Recently, I chose to spend more time with my family, whom I hadn't seen much due to COVID restrictions and long distance. However, I stayed productive by working on machine learning-related personal projects and doing AI-related mentorship sessions.

AI Mentor

OpenClassroom

October 2023 – Present

- Instructing online advanced AI courses to professionals on advanced AI topics, including data analysis and visualization, classical ML, NLP, CV, and AI project Management.

Machine learning Developer

Fluent.ai

June 2022 – Feb 2024

- Actively participated in the porting and seamless integration of our models across diverse embedded platforms, including HIFI 4/5 and Syntiant.
- Contributed to the proposal of a groundbreaking wakeword architecture, achieving a reduction of 55% in size compared to the original model, coupled with approximately 16% fewer floating-point operations (flops). The model exhibited consistent performance quality for (1) multi-wakeword scenarios, (2) against an extreme 0db background noise and for a diverse range of accents (both European and Asian), showcasing an average False Rejection Rate (FRR) of 7% across all wakewords and 2-3 False Alarm Rate (FAR) per wakeword — positioning it as a market benchmark.
- Led a rigorous research study aimed at enhancing the wakeword model's performance. The focus encompassed refining training approaches, architectures, and data, particularly concentrating on wakeword endpoint improvement.

Machine learning Developer

Hummingbirds AI

December 2020 – May 2022

- Implemented cutting-edge academic algorithms for object detection, segmentation, and tracking, ensuring the application of state-of-the-art techniques in Computer Vision.
- Engineered a personalized person-tracking system capable of handling occlusion challenges and diverse camera views.
- Led research initiatives by providing strategic AI-based insights and solutions, contributing to the resolution of real-world challenges in Computer Vision applications.

EDUCATION

MSc Computer Science

University of Quebec at Montreal

Jan 2018 - Sep 2020 | Montreal, Canada

- GPA: 3.94
- Advisor: Mohamed Bouguessa
- Research Project: Sign Language Recognition and Translation (Mention of Excellence)
- Designing a system that takes as input a clip (sequence of images) which designates the sign to translate and produces a coherent textual translation in a spoken language. The model, which is based on the Transformer architecture, can efficiently discover and learn the required Spatiotemporal information of sign gestures to produce the corresponding target translation.

'Licence' in Computer science

Higher institute of information and communication technologies (ISTIC)

Sep 2014 - Jun 2017 | Tunis, Tunisia

SKILLS & COMPETENCES

Programming languages

- Python (preferred), C++

Machine learning

- Pytorch (preferred), Keras, Tensorflow, Sklearn, Numpy, scipy
- Data analysis & visualization (Pandas, matplotlib, plotly..etc)
- Advanced statistics & Probability
- Advanced Calculus, linear algebra and optimization

Deeplearning - Theoretical & Practical experience

- Neural Networks & Convolutional neural networks (CNNs)
- Recurrent Networks (RNN, GRU and LSTM)
- Generative Models (GAN, VAE)
- Reinforcement learning (Q-learning, PPO..etc)

- Orchestrated the deployment of an efficient biometrics system, achieving high accuracy and low latency for continuous face identification. Implemented robust anti-spoofing measures against 2D and 3D attacks, ensuring system security and reliability.

R&D Computer Vision Developer

Ciena

September 2019 – September 2020

- Devised a comprehensive automated visual inspection pipeline, proficiently detecting faults in PCB cards for streamlined quality control.
- Engineered precise component detection algorithms, optimizing the identification of diverse product components
- Implemented unsupervised anomaly detection techniques for PCB cards, ensuring quality assurance and fault identification.

Research lab member

Latece, University of Quebec at Montreal

January 2018 – Present

- Engaged in groundbreaking research within the realm of Computer Vision, with a specific focus on advancing the field of Sign Language recognition.

R&D Machine Learning Developer

Orange Developer Center

February 2017 – June 2017

- Designed and constructed a prototype for an intelligent hydroponic growing system for plants.
- Implemented an artificial intelligence and rule-based system to autonomously manage indoor settings.
- Employed machine learning and computer vision techniques to identify plant anomalies and diseases based on leaf appearance.
- Developed a predictive model for assessing plant health utilizing indoor environmental settings.
- Established real-time control and monitoring of internal farm parameters through an intuitive web dashboard.

AWARDS

Scholarship of Excellence (UQAM)

Faculty of science - MSc Computer Science

2018 & 2019

Scholarship Mitacs Accelerate

Mitacs Accelerate Program

2019-2020

PROJECTS AND COMPETITIONS

Sign Language Translation

Université du Québec à Montréal

2019

- Mila Course (Prof. Aaron Courville) - Representation Learning (IFT 6135) Winter-2019, Grade: A-

Computer Vision

- OpenCV
- Image classification and segmentation
- Object and anomaly detection
- Video and Image Analysis

Speech Recognition

- Lightweight Wakeword Detection
- Command detection
- ASR, Speech-to-Text and Text-to-Speech

NLP

- Text classification
- Language modelling
- Machine translation

Others & Soft skills

- Cloud services (AWS, GCP, Azure)
- Worked in high-paced startup environments
- Led R&D ML projects
- Team Player with efficient communication skills
- Positive force and a good motivator

LANGUAGES

English

- TOEFL ibt (B2) : 86/120

French

- TEFAQ (C1/C2)

Arabic

- Native language

REFEREES

Charles Gauvin
VP Product & Engineering (OPS)
Fluent.ai
@ LinkedIn Profile

- Created a system that interprets a sequence of images, representing sign language, and generates a coherent textual translation in spoken language. Implemented advanced capabilities to effectively learn and extract essential spatio-temporal information from sign gestures, ensuring accurate and meaningful translations.

Sign Language Tutoring System

Université du Québec à Montréal

2019

- Developed an automated system facilitating the learning of sign language for non-deaf users.
- Implemented a real-time gesture recognition system for evaluating user gestures.
- Taught the sign language alphabet (ASL) and fundamental signs.
- Designed an intuitive and ergonomic Human-Machine Interaction Interface (HMI), ensuring ease of use and adaptability for learning various sign languages (ASL / LSQ).
- You can find the project in my Github (here).

Tracking and predicting student performance in university

Latece, UQAM

April 2018

- Implemented continuous tracking of students' academic performance and developed a predictive model for accurately foreseeing their future success, including graduation outcomes. Utilized a vast dataset sourced from the *'Service de Planification Académique et de Recherche Institutionnelle'* (SPARI) at the University of Quebec at Montreal (UQAM).

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PUBLICATIONS AND TALKS

Conference Articles

- Fares Ben Slimane, Mohamed Bouguessa (2020). "Context Matters: Self-Attention for Sign Language Recognition". In: *International Conference on Pattern Recognition (ICPR 2020) (accepted).*

Data mining of the *'Service de Planification Académique et de Recherche Institutionnelle' (SPARI)*

Seminar

25 April 2018 Latece - UQAM

- We used the massive dataset collected by the *'Service de Planification Académique et de Recherche Institutionnelle' (SPARI) of the University of Quebec at Montreal (UQAM).* https://spari.uqam.ca/
- *We propose an empirical analysis of the data collected by SPARI. In this analysis, we focus on two key points:*
  (1) a discussion of the dataset provided: general description, issues, challenges.
  (2) exploit this data using machine learning techniques.
- *See details here (in french).*